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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte MARTIN C. BAKER, SANTOSH K. DAS,
RICHARD F. HARAZ, WILLIAM F. HEHMANN,
VINCENT J. PAPOTTO, FEDERICO RENTERIA,
and GARY WINCHESTER

Appeal 2008-4170
Application 10/789,854
Technology Center 1700

Decided:[1] March 9, 2009

Before TERRY J. OWENS, PETER F. KRATZ, and
KAREN M. HASTINGS, *Administrative Patent Judges*.

KRATZ, *Administrative Patent Judge.*

DECISION ON APPEAL

This is a decision on an appeal under 35 U.S.C. § 134 from the Examiner's final rejection of claims 16-19. We have jurisdiction pursuant to 35 U.S.C. § 6.

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[1] The two-month time period for filing an appeal or commencing a civil action, as recited in 37 C.F.R. § 1.304, begins to run from the decided date shown on this page of the decision. The time period does not run from the Mail Date (paper delivery) or Notification Date (electronic deliver).

STATEMENT OF THE CASE

Appellants' claimed invention is directed to a hand-held laser fusion welding torch system including a body, handle, and nozzle. The nozzle includes an aperture through which a laser beam may pass toward a focal point. The nozzle includes a plurality of supply channels for a filler material passing there through, with each channel including an outlet port arranged to discharge filler material toward a focal point. The recited laser beam focal point and a filler material focal point associated with the torch system are recited as being independently adjustable.

Claim 16 is illustrative and reproduced below:

16. A hand-held laser fusion welding torch system, comprising:

a body having a first end and a second end, the body first end adapted to couple to laser beam delivery system;

a handle coupled to the body and dimensioned to be grasped by a hand;

a nozzle having a first end, a second end, and an outer surface, the nozzle first end coupled to the body second end, the nozzle second end including an aperture through which a laser beam from the laser beam delivery system may pass through to laser beam focal point; and

a plurality of filler material supply channels, each filler supply channel including an inlet port formed in the nozzle outer surface and an outlet port formed in the nozzle second end, each inlet port configured to receive filler material, each outlet port configured to discharge filler material toward a filler material focal point,

wherein the laser beam focal point and the filler material focal point are independently adjustable.

The Examiner relies on the following prior art reference as evidence in rejecting the appealed claims:

Lemelson	4,237,364	Dec. 2, 1980
Krause	5,321,228	Jun. 14, 1994

The Examiner maintains the following ground of rejection:

Claims 16-19 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Krause in view of Lemelson.

Appellants argue the rejected claims together as a group. Consequently, we select claim 16, the sole independent claim on appeal, as the representative claim on which we decide this appeal.

Appellants do not dispute the Examiner's determination that "[i]t would have been obvious to one of ordinary skill in the art at the time the applicant's invention was made to have provided the laser fusion torch system of Krause et al. with a handle or trigger as taught by Lemelson so that the device can be hand held, manually operated, and the laser source can be hand activated thereby allowing for localized spot welding to be performed (Lemelson, col. 1, ll. 25-32)" (Ans. 5). See the Appeal Brief and the Reply Brief in their entirety.

Rather, Appellants contest the Examiner's obviousness rejection by arguing that only Appellants, not Krause, taught or suggested "independent adjustability of the laser beam focal point and the filler beam focal point" (App. Br. 10).

ISSUE

Have Appellants established that the Examiner employed impermissible hindsight and reversibly erred in concluding that the

independently adjustable focal points proviso of representative claim 16 is a welding torch system attribute that would have been prima facie obvious, from the perspective of one of ordinary skill in the art, to provide for (or accord to) a welding torch system as taught or suggested by Krause?

SUMMARY DISPOSITION

We answer this question in the negative and we affirm the Examiner's obviousness rejection.

PRINCIPLES OF LAW

On appeal to this Board, Appellants must show that the Examiner erred in finally rejecting the claims. *Cf. In re Kahn*, 441 F.3d 977, 985-986 (Fed. Cir. 2006); *see also* 37 C.F.R. § 41.37(c)(1)(vii).

A claimed invention is unpatentable if the differences between it and the prior art are "such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains." 35 U.S.C. § 103(a) (2000).

"'Under *§ 103*, the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved. Against this background, the obviousness or nonobviousness of the subject matter is determined.'" *KSR Int'l Co. v. Teleflex, Inc.*, 127 S. Ct. 1727, 1734 (2007) (quoting *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1, 17 (1966)).

The question to be asked is "whether the improvement is more than the predictable use of prior art elements according to their established functions." *KSR,* 127 S. Ct. at 1740. The Supreme Court also noted in *KSR* that an obviousness analysis "need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ." *KSR*, 127 S. Ct. at 1741.

As to the specific question of "teaching away," our reviewing court in *In re Gurley*, 27 F.3d 551, 553 (Fed. Cir. 1994) stated:

> [a] reference may be said to teach away when a person of ordinary skill, upon [examining] the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the applicant.

It is well established that while the features of an apparatus claim may be recited functionally, the apparatus must be distinguished from the prior art in terms of structure, rather than function. *See In re Schreiber,* 128 F.3d 1473, 1477 (Fed. Cir. 1997).

"During examination, 'claims . . . are to be given their broadest reasonable interpretation consistent with the specification, and . . . claim language should be read in light of the specification as it would be interpreted by one of ordinary skill in the art.'" *In re Am. Acad. of Sci. Tech. Ctr.*, 367 F.3d 1359, 1364 (Fed. Cir. 2004).

FINDINGS OF FACT

In addition to findings of fact set forth elsewhere in this Opinion, we determine the following relevant findings of fact by a preponderance of the evidence standard:

Appellants' Specification discloses that "[t]o provide for such independent adjustment of the laser and powder, the body **104** of the torch **100** may be interchangeable and provide a selectable variety of diameters, and lengths as appropriate or useful for the welding activities, as indicated above" (Specification 15, ll. 7-9).

The subject Specification further provides that "it is the intention that the invention not be limited to particular embodiments disclosed herein for carrying it out, but the invention includes all embodiments falling within the scope of the appended claims" (Specification 23).

The Examiner has found that:

> Krause et al. teaches a laser fusion welding torch system, comprising: a laser beam delivery system or installation including a laser source and a laser beam focusing mirror or lens (column 2, lines 17-25); a nozzle assembly adapted to be coupled or connected by a first end to said laser delivery system (column 2, lines 22-25); a laser duct included in the nozzle assembly through which a laser beam from the laser delivery system passes and exit by an outlet aperture at a second end of the nozzle to a laser beam focal point (18), (figure 1 and column 4, lines 31-40). A plurality of powder or filler guide duct or port (6), provided in the nozzle assembly to receive powder or in fluid communication with a powder supply source (figure 1, column 2, lines 18-22 and column 4, lines 31-40); an outlet aperture (7), formed at the second end of the nozzle through which the powder exits and delivered to approximately the same focal point as the laser beam (figure 1 and column 4, lines 15-25) (see, the line of trajectory of both the laser beam

> and the powder or filler material intersecting at a focal point in front of the nozzle).
>
> Krause et al., teaches independent off-axis filler media feed or powder feed assembly that is operable independent of the laser beam. Note the powder is feed from an independent source by a duct into the nozzle (column 2, lines 17-22).
>
> Krause et al. teaches an off axis a gas flow delivery system operable to transmit gas to an operating site of the torch (gas duct "9", figure 1; column 2, lines 25-31 and column 4, lines 31-43).
>
> Krause et al. also teaches a removable gas cover or cap (10) connected to the nozzle by the thread "17"; wherein said gas cover or cap is detachably couple to the nozzle; the gas cover having an aperture through which the laser beam from the laser beam delivery system may pass when the gas cover is coupled to the nozzle (column 4, lines 31-39).

Ans. 3-5.

Appellants do not dispute these factual findings of the Examiner (see the Appeal Brief and Reply Brief in their entirety).

In addition to the removable cap (10), the Examiner has found that "Krause teaches a powder guide cap separate or independent of the laser guide part (see Krause col. 2, lines 39-42)." *See* FAO[2]; p. 4, para. 4. In this regard, Krause teaches or suggests that powder guide cap (4) is shaped like a truncated cone, attached by way of a threaded connection, and abuts the laser means guide part (1) (col. 3, l. 68-col. 4, l. l. 7). Moreover, Krause teaches or suggests that powder guide ducts (6) are distributed over the outer

[2] Final Office action (FAO) dated April 24, 2007.

peripheral surface of the powder guide cap (4) and follow the truncated cone shape and angle determined by the powder guide cap shape (col. 4, ll. 7-15).

On an outer side of the ducts (6), Krause discloses or suggests the use of a truncated cone shaped inert gas guide (8) threaded in place that leaves positive and non-positive connections between gas guide (8) and powder guide cap (4) (col. 4, ll. 15-21). Krouse suggests that the angle of the powder ducts and inert gas supply is determined, at least in part, by the guide cap and gas guide shapes employed, which are tightened (or loosened) with a threaded coupling ring (15) followed with addition of a removable threaded gas cap (10) (col. 4, ll. 7-30; Fig. 1). Krause teaches or suggests a range of angles (10-45 degrees) that are suitable for the powder outlet apertures of the powder guide ducts (col. 3, ll. 6-12).

The aforementioned teachings/suggestions of Krause are reasonably co-incident with and support the Examiner's determination that the system of Krause would have inferentially suggested and have been reasonably expected to provide for independent adjustment of the filler material (powder) focal point relative to the laser beam focal point of the welding system (FAO; para. bridging p. 4-5).

ANALYSIS

Based on our findings above and giving representative claim 16 its broadest reasonable construction consistent with the Specification, we determine that the hand-held fusion welding torch system called for in claim 16 does not require that the laser torch body be coupled to a laser beam source, much less carry a laser beam through an aperture thereof to a particular focal point. Representative claim 16 does not specify particular

structure of the claimed laser fusion welding system that is responsible for the argued and recited independent adjustability of the laser beam focal point and the filler material focal point much less a structural feature that is required by claim 16 but argued as not being taught or suggested by Krause.

Nor does representative claim 16 require any particular degree or amount of independent adjustability of the respective focal points. In this regard and as noted above, the subject Specification makes it clear that the claim requirement for independent adjustment of focal points encompasses using removable parts for the welding system so that the removed part can be replaced with a substitute part, such as a substitute laser body, which substitute part would allow for the respective focal point adjustment (Specification 15, ll. 7-9).

Given the above claim construction, and the suggestions implicit in the teachings of Krause with respect to employing a nozzle for the laser welding system that includes threaded (removable) connections for the laser beam guide part (1), powder guide cap (4), gas guide cap (8), gas cap (10), and coupling ring (15) together with Krause's teaching concerning the range of powder duct angles that can be employed, we are not persuaded of reversible error in the Examiner's obviousness assessment by the argument that Krause contains no suggestion for independently adjusting the filler focal point and the laser beam focal point. After all, an ordinarily skilled artisan is presumed to have some skill and ordinary insight. Here, Appellants have not substantiated the argument made by merely pointing to Krause's teaching concerning the tightening of the coupling ring because that same ring can also be loosened and allow for a substitute piece, such as a replacement powder guide cap with a somewhat different truncated shape

and angular arrangement for installation. This type of focal point adjustability is encompassed by representative claim 16, as note above; and, such adjustability would have been well within the skill level of an ordinarily skilled artisan to effectuate with a reasonable expectation of success in so doing. We certainly find no discouragement from such a parts replacement operation in the teachings of Krause.

Moreover, representative claim 16 is drawn to a hand-held laser fusion welding torch system, not a process for independently adjusting focal points. In this regard, Appellants have not fairly demonstrated a particular patentable structural difference that is required by the claimed independent focal point adjustability functionality.

As a final point, we note that no evidence of unexpected results commensurate in scope with the claimed subject matter or other persuasive secondary evidence has been adduced by Appellants, on this appeal record.

CONCLUSION

Appellants have not established that the Examiner used impermissible hindsight and reversibly erred in concluding that the representative claim 16 subject matter, including the recited independently adjustable focal points proviso, would have been prima facie obvious, from the perspective of one of ordinary skill in the art, based on the teachings and suggestions furnished by the applied prior art, including the teachings of Krause.

ORDER

The Examiner's decision to reject claims 16-19 under 35 U.S.C. § 103(a) as being unpatentable over Krause in view of Lemelson is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED

PL Initial:
sld

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